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ABSTRACT

Whether the construct of adaptive behavior, which has been developed and operationalized in western countries, could be successfully operationalized in a non-western country, Indonesia, was studied. Focus was on delineating procedures for cross-cultural adaptation and operationalization of the construct; creating an operationalization of the construct in an Indonesian setting; and investigating the construct validity of the operationalization by comparing it to its United States counterpart. A translated and culturally adapted version of the Vineland Adaptive Behavior Scales (VABS)--the Indonesian Adapted VABS (IVABS)--was prepared. The research project was concerned with the IVABS's capability to distinguish within and between Indonesian children with normal intelligence or mental retardation; the IVABS's capability to show age-based incremental changes in the adaptive behavior of Indonesian children that are comparable to incremental changes shown by the VABS with American students; the consistency of parents' and teachers' scores on the IVABS; patterns of relationships among IVABS scores, scores from other cognitive measures, and socioeconomic status; and the internal consistency of IVABS scores. Subjects were 43 children aged 6 to 18 years with mental retardation and a matched sample of 43 children of normal intelligence. Most behaviors judged appropriate in the western context were also appropriate in Indonesia; implications for transferring the construct to another culture are discussed. A 43-item list of references, seven tables, and four graphs are included. (SLD)

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Translation, Cultural Adjustment, and Operationalization of the Construct of Adaptive Behavior

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Educational and psychological constructs developed in western cultures are often thought to be useful as a basis for developing intervention programs in other cultures. Mental retardation is one such construct and governments in some developing countries have used it as a thematic element in program development.

Educational and developmental program planners should be aware that there is no unanimity among western specialists concerning the precise meaning of mental retardation and that a single perspective may be insufficient to understand it (Jones & Payne, 1986). But recognition of the viability of the multiple perspectives from which this construct may be defined, while theoretically useful, frequently does not solve the practical problem of creating and implementing programs to service persons with mental retardation. Regardless of which perspective is adapted, program developers must validly operationalize the construct so that persons with mental retardation may be identified and programs for them may be designed and implemented.

Even though there is no definitional unanimity, the most generally accepted and influential western characterization of persons with mental retardation is that of the American Association of Mental Deficiency (AAMD) (Grossman, 1983). The AAMD definition emphasizes that persons with mental retardation are characterized by below average general cognitive functioning that occurs concurrently with deficiencies in adaptive behavior, both arising in the developmental period.

ABSTRACT

This paper investigates whether the construct of adaptive behavior, which has been developed and operationalized in western countries, could be successfully operationalized in a nonwestern country, Indonesia. The purposes of the study were to (a) delineate procedures for cross-cultural adaptation and operationalization of the construct, (b) create an operationalization of the construct in an Indonesian setting, and (c) investigate the construct validity of the resultant operationalization by studying whether it had the same functional properties as its United States counterpart. The results are discussed in terms of the usefulness of the methodology used for ascertaining the worth of any operationalizations of constructs and themes borrowed from other cultures which will form the basis for educational program development and individual pupil assessment.

Unfortunately, researchers, program developers, and educational practitioners have focused primarily on intellectual function when attempting to service persons with mental retardation (Adams, 1973; Smith & Polloway, 1979; Zigler, Balla, & Hodapp, 1984; Clarke & Clarke, 1985; Baroff, 1986). Adaptive behavior, which is defined as the ability of a person to meet the developmental and social demands of his or her immediate environment (Grossman, 1983), is frequently not assessed and not programmed into educational interventions.

The construct of adaptive behavior seems to be a crucial one for educational program designers, however, since it focuses on the practical matter of living in one's cultural context: Can one maintain oneself with the degree of independence appropriate for one's age? Can one meet the personal and social demands imposed by one's culture? Components of adaptive behavior include self-help, physical development, communication skills, personal and social skills, health care, consumer skills, domestic skills, and community orientation, among other (Holman & Bruininks, 1985; Reschly, 1982). Specific adaptive behaviors may be delineated within each of these components. The delineated behaviors are age, environment, and culture specific actions that are required for the practical matter of living in one's culture. Thus, adaptive behavior would seem to be ideally suited for cross-cultural study and implementation.

The idea of adaptive behavior as a goal of educational and developmental programs for persons with mental retardation has been utilized primarily by western developed countries (Raynes, 1987). Whether this construct can be effectively transferred to a nonwestern culture is an open question, at least some aspects of which can be investigated empirically. For such investigations to proceed, it is necessary to operationalize the construct to the point where instruments can be developed. Once instruments have been developed, research can proceed on both the theoretical nature and practical importance of adaptive behaviors for the education of persons with mental retardation or other handicaps in a particular country.

The general question for our investigation is whether the construct of adaptive behavior, which has been operationalized by several instruments in western countries, especially in the United States (see Reschly, 1985; Kamphaus, 1987; and Sattler, 1988 for reviews), can be successfully operationalized in nonwestern countries, such as Indonesia. The specific purposes of our study were (a) to delineate procedures by which the construct of adaptive behavior can be cross-culturally adapted, (b) to culturally adapt a western (United States) operationalization of the adaptive behavior construct to a nonwestern culture (Indonesian), and (c) to investigate the construct validity of the resultant instrument. If the adaption and operationalization are successful, perhaps the procedures used in this study could be applied to other settings.

Indonesian Basis for Special Education Programs

As a developing country, Indonesia has made continuous efforts to improve the development of its youth through education (Ministry of Education and

Culture, 1982a). The Guidelines of State Policy on national education are based on Pancasila (five principles). Improving education for persons with intellectual and physical handicaps is consistent with the Second and the Fifth Principles (Director General of Primary and Secondary Education, 1982). The Second Principle is Just and Civilized Humanity and the Fifth Principle is Social Justice for the Indonesian people (Soesilo Soedarman, 1986). It is in these two principles that Indonesians anchor human rights, their place as a part of the whole human race, and have developed attitudes of mutual respect and cooperation with other peoples of the world (Director General of Primary and Secondary Education, 1982).

Attention to the education of children with handicaps is also based on Paragraph 31 Article 1 of the Indonesian Constitution which states that "Every citizen has the right to receive education" (Ministry of Education and Culture, 1982b). This implies that all children regardless of their handicaps should have equal opportunity for education. To implement these expectations and rights, plans for educational development were recently formulated in the Fourth and Fifth Year Plans or REPELITA (National Development Planning Agency of the Republic of Indonesia, 1984; 1989). These plans focus on improving the quantity, quality, relevance, and effectiveness of education. Compulsory education for aged 7-12 children with handicaps is one of the requirements, and implementation began in 1984 (Ministry of Education and Culture, 1985).

At the end of the Dutch administration in 1945, four special education institutions were inherited: three residential institutions for persons with blindness, deafness, communication disorders, and/or mental retardation, and one

school exclusively for children with mental retardation (The Department of Education and Culture, 1971). From the four inherited institutions, the number increased to 75 in 1971. By 1983, there were 306 special schools (Departemen Pendidikan dan Keubdayaan, 1984/1985). The country also provides new curricula for the special schools, adding teachers, and conducting integrated or mainstreamed programs starting with children with visual impairment (Departemen Pendidikan dan Kebudayaan, 1984/1985). Thus, there are three kinds of services for children with handicaps: Conventional schools, special primary schools, and integrated schools (Departemen Pendidikan dan Kebudayaan, 1987/1988).

The Existing Method for Identifying Children with Handicaps

Despite all of these improvements, data indicate that only about 5% of the children with handicaps were receiving education in 1980 (Departemen Pendidikan dan Kebudayaan, 1984/1985). By 1986, only 6.6% were in programs (Indonesian Ministry of Education and Culture with USAID, 1986). In addition, Carpenter (1987) pointed out that there are no sophisticated criteria for placing children with mental retardation. Thus, only children whose mental retardation is quite obvious can be identified and placed in schools.

Efficient instruments for identifying eligible children would be especially useful for implementing government programs for persons with handicaps. An Indonesian instrument to facilitate identification of children with handicaps (including children with mental retardation), the Simple Screening Device (SSD), was constructed and field tested in 1980. The SSD was one of the outcomes of the Association of South East Asian Countries (ASEAN) workshops for special education (Ministry of Education and Culture, 1981, 1985).

The SSD consists of three sections of forms:

1) Form A is used by an examiner to obtain data about a child from the parents. The data include information on the ante natal and delivery period and the child's development and medical history. The items covering a child's development period include Motor Development (5 items), Speech Development (2 items), Social Development (6 items), and other remarks, such as temper tantrum and anxiety feelings, (9 items).

2) Form B1 defines the handicaps and the symptoms to be observed by the examiner the AAMD definition is used for mental retardation. The examiner is to look for six symptoms to classify the child as having mental retardation: Physical deformities, delayed milestones, taking care of self, delayed speech/language, attention to one's environment, motor coordination, and drooling.

3) Form B2 provides guidelines for observing children who are thought to belong to each group (Ministry of Education and Culture, 1985).

The Limitations of the SSD

The SSD has some utility for identifying children with severe mental retardation. However, its accuracy for identifying children with less severe mental retardation and for diagnosing specific needs requiring educational programming is questionable. Children with less severe mental retardation can benefit greatly from a proper educational program, but the SSD seems to be only marginally helpful for educational purposes. Indonesian special education planners appear to have accepted a definition of mental retardation, which like that proposed by the AAMD, includes both cognitive and adaptive behavior

components. However, the SSD includes only a small proportion of the domain of adaptive behaviors. Regarding the cognitive component, the procedure calls for assessment with the Progressive Matrices (Raven, 1962) by a psychologist as a follow-up for those identified through the SSD as having mental retardation. Unfortunately, there are very few Indonesian psychologists to assess children with mental retardation (Carpenter, 1987).

Establishing the Construct Validity of an Operationalization of Adaptive Behavior

Framework for Construct Validation

In the broad sense, the validity of scores from a test is "an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of inferences and actions based on test scores or other modes of assessment" (Messick, 1989, p. 13). Construct validity focuses on the adequacy of the interpretations that can be made from test scores. Obviously, establishing the validity of the wide range of interpretations that are likely to be made from test scores that are used in many different settings and for a variety of decisions requires a series of studies over many years. Thus, the present study is one step in process.

If a test is translated and adapted from one culture to another, then the validity of the interpretations of scores from the resulting product needs to be established. Of special importance to this process is whether the adapted instrument has the same functional properties as the original instrument. If the scores on the adapted instrument do not function in the same way as the scores of the original instrument, then the body of knowledge that has been built up

through research and practice for interpreting the scores of the original instrument cannot be carried over to the cultural context of the adapted instrument. Although the literature is replete with studies that have translated and adapted tests from one culture to another, the majority of these investigations have focused primarily on the linguistic accuracy of translation. Few have investigated whether the resultant instrument appears to operate or function in the same way in its new context as the original instrument did in its original context. The present study uses this more functional approach.

Adaptive Behavior Instrument Translated

Doucette and Freedman (1980) identified more than 200 adaptive behavior instruments used various times in the United States. Reschly (1982) reviewed several popular and commercially available instruments. He found that adaptive behavior is usually operationalized by measuring persons in four domains: (1) self maintenance and independent functioning, (2) interpersonal relationships, (3) social responsibility, and (4) cognitive competencies or communication skills. Kamphaus (1987), Holman and Bruininks (1985) evaluated the content and psychometric quality of a number of adaptive behavior instruments, concluding that the better adaptive behavior instruments are the Scales of Independent Behavior (SIB) (Bruininks, Woodcock, Weatherman, & Hill, 1984) and the Vineland Adaptive Behavior Scales (VABS), Survey Form (Sparrow, Balla, & Chicchetti, 1984).

It is the authors' view, that from an educational perspective, the VABS is not only technically adequate, but it also provides detail about a person's behavior in each of the four domains which can be used to identify and program

for individuals with mental retardation. For this reason, the VABS, Survey Form, was selected as an object of study in this research.

The VABS, Survey Form consists of 297 items (adaptive behaviors) organized into four domains on subtests: Communication, Daily Living Skills, Socialization, and Maladaptive Behavior. In a semi-structured interview, the "examiner" interviews an "informant", usually either a parent or a teacher. The object of the interview is to obtain information about a child which the examiner can transform to a rating (from 0 to 2) on each of the 297 adaptive behaviors. A rating of 0 means the child is unable to perform the behavior in question and 2 means the child always can perform it. The items within a domain are ordered or scaled in a developmental sequence so that a "floor" and "ceiling" can be obtained. A floor is reached when it can be assumed from the interview that the child can perform all behaviors lower on the developmental scale; a ceiling is reached when it can be assumed that the child cannot perform all of the behaviors higher on the developmental scale. During the interview rules are provided for identifying the floor and ceiling points for a child. In this manner, scores are obtained for each domain. A composite score is obtained by summing the scores on all domains except Maladaptive Behavior.

Functional Psychometric Properties Studied

We investigated whether a translated and culturally adapted VABS (henceforth called the Indonesian Adapted VABS or IVABS), has the same functional psychometric properties when used in Indonesia as the original VABS has when used in the U.S. If it does not, then even if the linguistic properties of the translation were adequate, most of the interpretive framework of the original VABS could not be carried forward to the Indonesian context. That is, the IVABS

would not be considered as valid an operationalization of the AAMD construct of adaptive behavior as is the original VABS. A linguistically accurate but operationally invalid IVABS could not be said to measure the construct of adaptive behavior in the same way as it is measured by the original VABS.

The functional properties we studied are our rationale for focusing on them are as follows:

(1) The capability of the IVABS to distinguish within and between groups of Indonesian children. Children with mental retardation are conceptualized as exhibiting less adaptive behavior than cohorts with normal intelligence. Investigators in the U.S., (e.g., Sparrow, Rescola, Provence, Condon, Goudreau, and Cicchetti, 1985; Engleman, 1974, Slate, 1983) using a variety of adaptive behavior instruments have demonstrated that children with normal intelligence score higher than children with mental retardation on adaptive behavior tests. Further, within each of these two groups, children differ in their independence, maturity, and adaptive behaviors. A valid measure of adaptive behavior should exhibit these within and between group differences.

(2) The capability of the IVABS to demonstrate age-based incremental changes in the adaptive behavior of Indonesian children that is comparable to the incremental changes demonstrated by the VABS with American children. Adaptive behavior is conceptualized as developmentally incremental. That is, older children exhibit more adaptive behaviors than younger children: They show increased independence, coping skills, and maturity. The original VABS demonstrates this pattern of increased adaptive behavior scores with age (Sparrow, Balla, & Chicchetti, 1984).

(3) The capability of the IVABS scores to be consistent from parent to teacher and from parents on two occasions. An instrument cannot validly measure the construct it sets out to measure unless the scores are consistent, since inconsistency reflects measurement error. Both parents and teachers have significant opportunities to observe children's adaptive behavior. If parents and teachers of the same children are interviewed, and asked to rate the same behaviors, their reports should be consistent. However, since parents and teachers observe the children in different settings, it is expected that ratings from the two informants will be positive, but not exceptionally highly related, a fact demonstrated in the research literature (e.g., Mealor & Richmond, 1980; Mayfield, Forman, & Nagle, 1984; Harrison, 1985; Rainwater-Bryant, 1985). However, one type of informant (e.g., parents) should be quite consistent in the ratings from one time to the next, since such an informant has had repeated opportunity to observe in the same context (e.g., at home). If no such stability is found, we would question the validity of the instrument as a measure of adaptive behavior: An unstable (unreliable) measure cannot be valid. The original VABS has demonstrated high stability reliability (Sparrow, Balla, & Cicchetti, 1984).

(4) The pattern of relationships among IVABS scores, scores from cognitive measures, and SES. Adaptive behavior is a construct that is related to, but distinct from cognitive ability and socio-economic status (SES). If a test which is supposed to measure adaptive behavior is highly correlated with measures of cognition, academic achievement, and SES, one would have to question its validity as a measurement of a characteristic distinct from such traits. The general finding from the American research literature is that adaptive behavior and

cognitive ability are moderately correlated and both are influenced by general development (Keith, Fehrman, Harrison, & Pottebaum, 1987). Higher VABS scores have been associated with higher SES (Harrison, 1985; Sparrow, Balla, & Cicchetti, 1984).

(5) The internal consistency of the IVABS Scores. If a measure of a characteristic such as adaptive behavior is to be interpreted in a straight forward way, the parts of the instrument producing the scores should be internally consistent. For example, the IVABS contains items that are organized into four scales or domains. If each scale separately is to have a meaningful interpretation, say for programmatic and/or diagnostic purposes, then ratings on items within a scale should be more highly related to each other than to ratings on items from other scales. Similarly, the total or composite score on the IVABS should have high internal consistency reliability in order to be interpretable.

METHOD

Design and Procedures

Qualitative and quantitative analyses were used to study the IVABS: (a) judgmental review, (b) content analyses, and (c) statistical analyses. There were four phases to the study.

Phase one or the translation phase applied both an ethnographic translation procedure (Brislin, 1983; Hulin, Drasgow, & Parson, 1983) and an empirical tryout. Each of the 252 items of the VABS-Survey Form was translated from English to Bahasa Indonesian and back-translated to English. Back-translation is a partial solution to the problem of conceptual equivalence (Berry & Dasen, 1974, Kline, 1983). An American expert in the Language Acquisition Institute (LAI) of the University of Pittsburgh and two Indonesian English teachers living

in Pittsburgh compared and judged the original and the back-translated items. Nonequivalent back-translated items were retranslated and rejudged until both versions were judged equivalent. Next, both the original English and the Indonesian translation were administered to 30 bilingual parents in Pittsburgh whose children were of normal intelligence and between the ages 6 and 18. One parent of each child was a student at the University of Pittsburgh.

The means and variances of the subtest raw scores of the two versions should be statistically equivalent and the correlation between the raw scores should be quite high if the back-translated form was satisfactory. The statistical significance of the means and the variances were tested using dependent sample t-tests and were shown to be statistically equivalent. The correlation coefficients between the scores on the English version and the back-translation of each subtest ranged from .926 (Maladaptive Behavior) to .995 (Daily Living Skills), which as expected, were quite high. Because of these positive findings, the translation was deemed satisfactory and we proceeded to the second phase.

Phase two was the adaptation phase. The goals of this phase were to ascertain the fairness of the translated items and to alter or adapt those items deemed unfair to use as a basis for rating Indonesian children's adaptive behavior. Tittle's (1982) guidelines were followed to review the translated items for fairness. A panel of Indonesian experts was constituted in Jakarta, Indonesia and directed in the review process by the senior author. The members of the panel were two psychologists, a teacher from a school for children with mental retardation, and a parent of a child with mental retardation. The translated VABS and guidelines for review were given to the panel members two

weeks before they met as a group. When the group met, each item was reviewed for its culture restrictiveness and unfamiliarity to Indonesian parents and teachers who would compete the VABS. Items asking if children used irregular plurals or whether they ate with a fork are examples of items that were judged to be unfamiliar or restrictive. As necessary, items were eliminated, kept as translated, modified, or replaced with new items.

Twenty-five items' translation was judged inadequate and were rewritten with the help of an Indonesian language teacher. Four items were eliminated because they were inappropriate to the Indonesian context and equivalent cultural behaviors could not be easily substituted, and three items were modified to incorporate Indonesian-equivalent content. The resulting set of 245 items was carried forward to the next phase.

Phase three was the fine-tuning phase. The goal of this phase to make adjustments to the test and administration procedures before using it in the larger scale data collection effort. The items from phase two were administered to five parents and teachers of students with mental retardation in Monado, the capital of North Sulawesi Providence. As a result, three more items were eliminated, four items were modified, and the administration procedure was modified by offering examples to parents or teachers who did not understand the behavior statements.

The version of the test emerging from phases two and three contained 245 items and will be referred to as the IVABS in the remainder of this article. Details of the items and a copy of the IVABS are found in Tombokan-Runtukahu (1989).

Phase four was the data collection phase.

Sample

Forty-three children with mental retardation were matched on the basis of age, gender, and SES with 43 children with normal intelligence. All children were enrolled in schools in the Minahassa District or in the capital city of North Sulawesi Providence. This providence has nine schools servicing children with moderate to severe handicaps. Five of the schools are in Minahassa District, the most populated of the province's four districts. The 43 children with mental retardation were sampled from the only two special schools in the providence servicing children having only mental retardation. Nineteen of these children were classified by the schools as "capable to be educated" and 24 were classified as "capable to be trained."

The 43 children were matched to 43 children with normal intelligence. The children with normal intelligence were sampled from eleven primary, four junior secondary, and three senior secondary schools. Matching information was obtained from the school records which are considered more accurate than information a researcher could obtain from parents directly since the school record information is used as the basis for awarding tuition remission.

The matched pairs ranged in age from 6 to 18 years. Socioeconomic status was gauged on a four-point scale that corresponded to government employee classifications. The sample SES ranged from 1 (low skill workers) to 3 (middle level professionals). There were no 4s (high professional level) children in the sample. There were 21 pairs of boys and 22 pairs of girls. The sample size exceeded the minimum recommended by Cicchetti and Sparrow (1981) for reliability studies using the VABS.

Instruments

The IVABS was described previously. This instrument consists of 245 items organized with four domains. Parents and/or teachers of children are interviewed to ascertain whether a child can exhibit the behaviors which constitute the items. Each behavior is rated 0, 1, or 2. Raw scores are the sum of the ratings within each of the four domains. Since the behaviors are arranged in a developmental sequence, no one interviewee is queried about all 245 items. Interviewing within a domain stops when the interviewee indicates all of the higher level behaviors cannot be performed by the child and all of the lower level behaviors can be performed.

In addition, the Coloured Progressive Matrices (CPM) (Raven, 1962) was administered as a measure of cognitive functioning. This instrument is recommended by the Indonesian government as a follow-up to the SSD. It was administered individually to students during school hours. Raw scores were used in the analysis. Academic achievement was measured using the grades students received from their teachers in the areas of Indonesian language and mathematics. These were reported on a 10 point scale, with 10 being the highest value. All grades were for the semester immediately preceding the collection of data for this study. The Indonesian language grade includes assessment of reading, writing, literature, and grammar achievement. Although both children with mental retardation and with normal intelligence received grades in these two areas, the curricula of the two groups differed greatly. The curriculum for the children with mental retardation is much more simple and basic than their cohorts with normal intelligence.

Procedure

Parents and teachers of all children were interviewed using the IVABS by the senior author. Some parents were interviewed in their homes while some preferred to be interviewed at the schools, perhaps because they were embarrassed by their poverty. Eight parents of children with mental retardation preferred the school setting, while ten parents of children with normal intelligence preferred the school setting.

The senior author administered the CPM individually to the children during school hours by removing them from their classrooms.

To study the consistency of parents' ratings, each parent participating in the study was interviewed a second time, two weeks after the first interview. The second interview focused only on the IVABS.

The data were brought back to the University of Pittsburgh where they were put in machine readable form and analyzed using the SPSS mainframe program.

RESULTS

Capability of the IVABS to Distinguish Within and Between Groups of Children

Table 1 presents the basic results concerning the capability of the IVABS. In general, there is sufficient variability within the groups with normal intelligence and with mental retardation so that individuals may be distinguished on the four dimensions of adaptive behavior. This variability is apparent for both ratings obtained from teachers and from parents.

Insert Table 1 About Here

Examination of the frequency distributions of the two groups of children showed striking differences, however. The distributions for the children with

normal intelligence are negatively skewed, while those for children with mental retardation are positively skewed. Also, the differences in the mean scores of the two groups are statistically significant, with children of normal intelligence scoring higher. These differences are replicated with both teachers' and parents' ratings.

These data support other investigators' findings in the U.S. For example, Sparrow, Rescola, Provence, Condon, Goudreau, and Cicchetti (1987), Engleman (1974), and Slate (1983) all sound similar differences using a variety of adaptive behavior instruments.

Thus, there is support for the interpretation that IVABS is capable of distinguishing between children with various degrees of development in adaptive behavior and of distinguishing between children with mental retardation and those with normal intelligence.

Capability of the IVABS to Demonstrate Age-Based Incremental Changes in the Adaptive Behavior of Indonesian Children

Figure 1 shows the average IVABS score for children with normal intelligence at each of several age levels and compares these data with the averages of American children of normal intelligence on the original VABS. When the lengths of the comparable subtests of IVABS and VABS differed, average item scores were compared (Panels A and B). Each American data point is based on 200 children used in the American norming sample.

Although our sample at each age level is very small, there is a general tendency for the Indonesian data to support the contention that the IVABS appears to follow an incremental development pattern similar to that found with the VABS in the United States. If this finding is confirmed by future research with

larger samples, it will mean that adaptive behavior exhibits similar growth on developmental patterns in the two cultures. The pattern observed in the present study, while not conclusive, is quite encouraging, however.

Although the Indonesian children scored slightly lower than the American children, we cannot put too much stock in this result because of the small sample size and the fact that there was no deliberate attempt to match VABS items with the age levels of Indonesian children during the translation and adaption phases. Further research will be needed in order to make conclusive statements about the adaptive behavior attainment levels of Indonesian children compared to American children.

There is scant American data on how children with mental retardation compare at different ages on the VABs. Preliminary indications from Professor Sparrow's laboratory with small samples indicate that older children with mental retardation have better VABS scores than younger children with mental retardation (Goudreau, October, 1989, personal communication). A comparable pattern was observed in this study of Indonesian children with mental retardation (see Tombokan-Runtukahu, 1989).

Capacity of the IVABS Scores to be Consistent

Table 2 shows the correlations between parents' and teachers' ratings of the same children in each adaptive behavior domain. Although the correlations are high, they are not high enough to conclude that parents' and teachers' ratings are interchangeable. Nevertheless, they are high enough to conclude that both informants are rating adaptive behavior quite consistently. The Socialization and Maladaptive Behavior Domains show less consistency of ratings between parents and teachers. For all domains, there is more consistency between

parents' and teachers' ratings of children with mental retardation than for children with normal intelligence. These results are consistent with those reported by other investigations (see previous section).

Insert Table 2 About Here

Another indication of consistency are the ratings obtained from children's parents on two different occasions two weeks apart. Table 3 reports the correlations between the ratings on two occasions. For children with mental retardation, the correlations range from .96 (Socialization) to .99 (Daily Living Skills); for children with normal intelligence they range from .86 (Communication) to .95 (Socialization and the Composite). These findings are similar to the correlation obtained by the authors of the original VABS (Sparrow, Balla, & Chicchetti, 1984) and by studies of other adaptive behavior scales (e.g., Kopp, Rice, & Schumacher, 1983).

Although the correlations were high for both groups, they tended to be slightly higher for children with mental retardation than for children with normal intelligence. Further, in both groups, the average parent-based rating tended to be a point or two higher on the second administration (except for Maladaptive Behavior which is slightly lower, but lower scores in this domain are more favorable to the child, so the generalization still holds). We conclude that Indonesian parents give reports of their children's adaptive behavior that are quite stable over short periods of time.

Insert Table 3 About Here

Relationship to Cognitive Measures and SES

The correlations between the IVABS and three cognitive measures (language and mathematics grades in school and Raven's (1962) Coloured Progressive Matrices (CPM)) are shown in Table 4. The negative correlations with Maladaptive Behavior are to be interpreted in a positive way: That is, large Maladaptive Behavior scores mean less adaptive behavior and vice versa. For children with mental retardation (see Panel A of the table), the IVABS correlations with language grades range from -.55 to .89, with mathematics grades from -.43 to .81, and with CPM from -.34 to .71. The lowest correlations are with the Maladaptive Behavior scale. Within domains, parents-based and teachers-based ratings have about the same correlation with the cognitive measures, indicating that the IVABS traits are operating the same way regardless of informant.

The statistical difference between the IVABS vs language grades correlations and the CPM vs language grades correlations were tested with Hotelling's t-test. Similarly, the IVABS and CPM correlations with mathematics grades. The results are reported in the two righthand columns of Table 4. For the data in Panel A, all IVABS correlations with grades were statistically higher than the CPM correlations except for socialization (T&P) and Maladaptive Behavior (T&P) with language grades; and Daily Living Skills (P), Socialization (P), and Maladaptive Behavior (T&P) with mathematics grades.

The pattern for children with normal intelligence (see Panel B) is quite different. The observed IVABS correlations with language grades ranges from .26 to .39, with mathematics grades from .17 to .31, and with CPM from -.26 to .61. Although within domains the observed CPM vs adaptive behavior correlations were

higher, only the Socialization (P)-mathematics grades correlation was significantly lower than the CPM-mathematics grades.

Insert Table 4 About Here

The relatively higher correlations within the groups of children with mental retardation suggest that these children's grades may be influenced by their adaptive behavior more than the grades of children with normal intelligence. For example, teachers may, in part, base their grades for students with mental retardation on their progress in adaptive behavior, rather than marking strictly on their academic attainment. It should be recalled, too, that although both groups of children receive school grades in Indonesian language and mathematics, the children's curricula are quite different.

In general, the pattern of correlations for these two groups of Indonesian children correspond to patterns of correlation found with American children (e.g., Sparrow, Balla, & Chicchetti, 1984; Keith, Fehrman, Harrison, & Pottebaum, 1987). Thus, in this regard the IVABS appears to function in Indonesia similarly to its American counterpart, VABS.

Correlations of IVABS with parents' SES are shown in Table 5. All correlations are low and correlations of parents- and teachers-based ratings with SES do not differ statistically from each other. These essentially zero correlations between IVABS and SES are inconsistent with studies of the original VABS in the United States (Harrison, 1985; Sparrow, Balla, & Cicchetti, 1984). Those studies showed that adaptive behavior scores increased with parents' SES. One explanation for our results may lie in the fact that there was little

variability in parents' SES in our data. Most parents' SES was at the second level, only a few at the first and third levels, and none at the fourth level.

Insert Table 5 About Here

Internal Consistency of IVABS Scores

Internal consistency was examined by analyzing the parents-based ratings after pooling the two groups of children. (Thus, N = 86 children.) Responses to the Maladaptive Behavior items were not included since this scale is not the major focus of the investigation. The scores (0, 1, or 2) from each item were correlated with (a) the scores from each domain (Communication, Daily Living Skills, Socialization), (b) the total (Composite) IVABS score, and (c) the scores from all other items. There were 218 items, so there were 23,653 different correlations among the items, not including the items' self-correlations. Items for which all children receive ratings of 0 or 2, represent ceiling and floor effects, had intercorrelations of zero with all other items, and were eliminated from further analyses. (Recall that, within domain, items are ordered in a developmental sequence spanning a wide range of ages from 2 to 18 years. Thus, given the range of ages of the children in the study, many behaviors (items) are expected to be performed by all children or by none of them.)

If the scores in each domain are internally consistent, the items from within a particular domain (scale) should correlate higher with the total score for that domain than with either (a) the total scores from other domains or (b) the composite score. The mean item-domain and item-composite correlations are shown in Table 6. As can be seen, on average for each domain, items correlate more highly with their own domain score than with other domain scores. This is

a positive finding, indicating that IVABS domain scores are relatively internally consistent. However, there is still substantial correlations of item scores with other domain scores. This indicates that the score on one domain of the IVABS offers limited information about a child that is unique or independent from other domains in the battery. The average item-composite correlations are moderate, but lower than the average item-within-domain correlations. This means that the IVABS Composite score is not very internally consistent and perhaps it cannot be interpreted in a manner that suggests the score reflects a single trait.

Insert Table 6 About Here

Table 7 is a summary of the inter-item correlations. Each cell contains the average correlation among the items described by the row and column headings. The diagonal cells present the average within domain intercorrelations, while off-diagonal cells present the average between domain intercorrelations. For example, .37 is the average correlation of the Communication vs Daily Living Skills items, while .47 is the average correlation among the Communication items.

It is expected that items within a domain would be more highly correlated than items between domains, if the domain scores are to be internally consistent and represent distinct traits. Although this is true for the Communication domain, it is not true for the other domains. Daily Living Skills items correlate higher with Communication items (mean r = .37) than they do with items in their own scale (mean r = .34). Similarly, Socialization items have higher average correlations with Communication items (.38) than within their own scale (.34). The differences in these average correlations are small, however.

Insert Table 7 About Here

The pattern of higher average correlations with the Communication domain may signal that in the Indonesian context, parent-based ratings of children in Daily Living Skills and Socialization are influenced strongly by their children's communication skills. Nevertheless, it may be concluded that the evidence suggests that IVABS is internally consistent but that the domain scales do not appear to be measuring entirely distinct traits. It should be noted, too, that children with mental retardation and with normal intelligence were pooled for these analyses. Different results may have been obtained had the two groups' data been analyzed separately.

DISCUSSION

Educational program planning, in general, and special education program planning, in particular, are organized around themes and constructs. Regarding special education programs, the construct of adaptive behavior is appealing both as an organizing theme and outcome variable because it focuses on the practical matters related to living in one's cultural context.

The construct has been fleshed out in a western cultural context, especially in the United States, and has been divided into broad subdomains: the ability to communicate in an age-appropriate way with those peers and adults with whom one has contact; the ability to use age-appropriate skills to care for one's health and immediate personal needs' and the ability to cope and relate in an age-appropriate way to one's peers and authorities in order to meet social expectations and needs. Each broad domain can be further specified by

identifying numerous specific age-appropriate behaviors which those who are adapting to their cultural context are capable of performing.

A crucial step in the process of designing and implementing a program for training persons who are deficient in adaptive behaviors, is to operationalize the construct by developing one or more instruments to assess the extent to which individuals have already acquired age-appropriate adaptive behaviors and which adaptive behaviors still need to be learned. In developed western countries such as the United States, there are numerous instruments operationalizing the construct; and for the better ones, a research base supporting their validity has been created. Such operationalized and validated instruments either do not exist, or exist in only a crude way, in nonwestern developing countries such as Indonesia.

Some have succumbed to the temptation of implementing one of these western instruments immediately after translating them from English to the national language. The danger in this approach is that the instrument may not function the same way in the two cultural contexts. If it does not, then the results of individuals' assessments may not be interpreted in the ways suggested by the research base in the western country.

The approach taken in this study was to continue to research the construct validity of the instrument after it was translated and adapted to the Indonesian context. The translation and adaptation resulted in eliminating several specific behaviors from the western adaptive behavior subdomains which were inappropriate to a non-urban Indonesian context, and adding in their place behaviors more appropriate in the Indonesian context. The majority of the behaviors defined as

appropriate in the western context were also judged to be appropriate in the Indonesian context, however.

Since construct validity focuses on the empirical as well as the logical bases for interpreting test results, it is especially appropriate for translated and adapted instruments. In this study, we explored whether the translated/adapted instrument had functional properties in the Indonesian context that were similar to the original instrument in the American context. In general, we found that the basic properties of the IVABS were the same as those of the original VABS.

One implication of this work is that transferring the adaptive behavior concept to non-United States settings is possible. This is encouraging to special education planners and practitioners who are persuaded by the rationale that developmental disability programs, in general, and programs for children with mental retardation,in particular, should include attention to adaptive behavior as one important component. This work demonstrates that careful translation and adaption, progressing in well-ordered stages with empirical trials supporting and guiding subsequent stages, is a useful strategy to bring an adaptive behavior instrument into a new cultural context and have it function in the ways it was originally intended to function.

Although this study indicates that successful operationalization of the adaptive behavior construct is possible in a new cultural setting, it does not support the immediate implementation of the IVABS on a national basis in a country as diverse as Indonesia. First, we note that the subjects were drawn from only one providence, so there is a need for replication of the research in

other providences which are quite different from North Sulawesi. Second, a limited number of variables were incorporated in this study. Further, research is needed with such variables as measures of school achievement beyond those we studied, existing Indonesian assessments for identifying children with handicaps (e.g., the SSD), other standardized cognitive tests, and a broader range of SES than was possible in this study. Third, it is necessary to establish interrater reliability. In practice, the person conducting the interview of a parent or teacher typically is different from child to child. The effects of changing the interviewer (who actually provides the behavior ratings based on the information obtained from the informant) was not studied: The senior author conducted all of the interviews. Evidence needs to be forthcoming that the results obtained from one interviewer are nearly identical to the results obtained for the same child from other interviewers. If such reliability cannot be demonstrated, many children could be misclassified unknowingly with resulting placement in inappropriate programs. Finally, after having demonstrated the functional utility of the instrument in diverse populations, one should standardize the instrument nationally and create an appropriate score scale to enhance interpretations.

SUMMARY AND CONCLUSIONS

This study investigated whether the construct of adaptive behavior, which has been operationalized in western countries, could be successfully operationalized in a nonwestern country, Indonesia. The purposes of the study were to (a) delineate procedures for cross-cultural adaption and operationalization of the construct, (b) create an operationalization of the construct in an Indonesian

setting by culturally adapting an American instrument, and (c) investigate the construct validity of the resulting instrument.

The construct of adaptive behavior was transferred to the Indonesian context by working with an American operationalization of it, the Vineland Adaptive Behavior Scale, Survey Form, and applying linguistic translation, judgmental review, content analysis, and statistical analysis. The research was conducted in four phases: (1) translation phase, (2) adaption phase, (3) fine-tuning phase, and (4) empirical study phase. A result of the first three stages was the Indonesian Adaption of the Vineland Adaptive Behavior Scale (IVABS) consisting of 245 items: 65 in Communications Domain, 87 in the Daily Living Skills Domain, 66 in the Socialization Domain, and 27 in the Maladaptive Behavior Domain.

In phase four, the IVABS was administered to parents and teachers of a matched sample of children with mental retardation and with normal intelligence in the Minahassa District and in the capital city of the North Sulawesi Providence of Indonesia. We conclude that the construct of adaptive behavior can be successfully applied and operationalized in an Indonesian setting. The instrument created does function quite similarly to the way the original American version functions. This opens the possibility of using many of the western research findings as part of the interpretive framework for adaptive behavior in Indonesia. The procedures developed and used in this study also serve as examples or models for how others might proceed when operationalizing the construct of adaptive behavior (or other age-linked, growth-related constructs) in new cultural contexts.

REFERENCES

Adams, J. (1973). Adaptive behavior and measured intelligence in classification of mental retardation. American Journal of Mental Deficiency, 78. 77-81.

Baroff, G. S. (1986). Mental retardation: Nature, cause, and management. New York: Wiley and Sons.

Berry, J. W., & Dasen, P. R. (1974). Culture and cognition: Readings in cross-cultural psychology. London, Great Britain: Methuen.

Brislin, R. W. (1983). Cross-cultural research in psychology. Annual Review in Psychology, 34, 363-400.

Bruininks, R. H., Woodcock, R. W., Wetherman, R. F., & Hill, B. K. (1984). Scales of independent behavior (SIB). Allen, TX: DLM Teaching Resources.

Carpenter, R. L. (1987). Special education teacher preparation and service delivery in a developing country: Indonesia. Teacher Education and Special Education, 10(1), 37-43.

Cicchetti, D. V., & Sparrow, S. S. (1981). Developing criteria for establishing interrater reliability of specific items: Applications to assessment of adaptive behavior. American Journal of Mental Deficiency, 86(2), 127-137.

Clarke, A. M., & Clarke, A. D. B. (1985). Criteria and classification. In A. M. Clarke, A. D. B. Clarke, & J. M. Berg. Mental Deficiency: The changing outlook (5th ed.), (pp. 27-52). New York: The Free Press.

Departemen Pendidikan dan Kebudayaan. (1984/1985). Petunjuk Pelaksanaan SLB. (Guides to the implementation of education). Jakarta, Indonesia: P. T. Bina Flora Utama.

Departemen Pendidikan dan Kebudayaan. (1987/1988). Data/Informasi keadaan SLB negeri dan swasta, sekolah dasar luar biasa dan pendidikan terpadu (Data/Information of public and private special schools, special elementary school and integrated school). Jakarta, Indonesia: Departemen Pendidikan dan Kebudayaan).

The Department of Education and Culture of the Republic of Indonesia. (1971). Special education in Indonesia. Jakarta, Indonesia: The Department of Education and Culture.

Doucette, J., & Freedman, R. (1980). Progress tests for developmentally disabled: An introduction. Cambridge, MA: Alet Books.

Goudreau, D. (1989, October) Personal communication.

Grossman, H. J. (1983). Classification in mental retardation. Washington, D.C.: American Association on Mental Deficiency.

Harrison, P. L. (1985). Vineland adaptive behavior scales. Classroom edition. Circle Pines, MN: American Guidance Service, Inc.

Holman, J., & Bruininks, R. (1985). Assessment and training of adaptive behavior. In. K. C. Lakin & R. H. Bruininks (Eds.). Strategies for achieving community integration of developmentally disabled citizens (pp. 73-104). Baltimore: Paul H. Brooks.

Hulin, C. L., Drasgow, F. & Parsons, C. K. (1983). Item response theory: Application to psychological measurement. Homewood, IL: Dow-Jones-Irvin.

Indonesian Ministry of Education and Culture with USAID (1986, April). Indonesian education and human resources sector review. Tallahassee, Florida State University, Educational Efficiency Clearinghouse.

Jones, E. R., & Payne, J. S. (1986). Definition and prevalence. In J. R. Patton, J. S. Payne & M. Beirne-Smith (Eds.). Mental retardation (2nd ed.) (pp. 33-155). Columbus, OH: Charles E. Merrill Publishing Company.

Kamphaus, R. W. (1987). Conceptual and psychometric issues in the assessment of adaptive behavior. The Journal of Special Education, 21(1), 27-33.

Keith, T. Z., Fehrman, P. G., Harrison, P. L., & Pottebaum, S. M. (1987). The relation between adaptive behavior and intelligence: Testing alternative explanations. Journal of School Psychology, 25, 33-43.

Kopp, J. T., Rice, V. L., & Schumacher, K. M. (1983). Test-retest reliability and concurrent validity of the Vineland adaptive behavior scales. Unpublished Manuscript, Grafton State School, Grafton, ND.

Mayfield, K. L., Forman, S. G., & Nagle, R. J. (1984). Reliability of the AAMD adaptive behavior scale, Public Version. Journal of School Psychology, 22, 53-61.

Mealor, D. J., & Richmond, B. O. (1980). Adaptive behavior: Teachers and parents disagree. Exceptional Children, 46, 386-389.

Messick, S. (1989). Validity. In R. L. Linn (Ed.). Educational Measurement (3rd ed.) New York: MacMillan Publishing Company, pp. 13-104.

Ministry of Education and Culture. (1981). First ASEAN workshop on special education. Jakarta, Indonesia: Office of Educational and Cultural Research and Development.

Ministry of Education and Culture. (1982a). Indonesian country report on special education. Jakarta, Indonesia: Office of Educational and Cultural Research and Development.

Ministry of Education and Culture. (1982b). Second ASEAN workshop on special education. Jakarta, Indonesia: Office of Educational and Cultural Development.

Ministry of Education and Culture. (1985). Indonesia country report: A wrap-up report on special education. Jakarta, Indonesia: Office of Educational and Cultural Research and Development.

National Development Planning Agency of the Republic of Indonesia. (May, 1984). Policies and prospects for sustained development under challenging conditions. REPELITA IV, The Fourth Year Development Plan of Indonesia, 1984/1985 - 1988/1989. Jakarta, Indonesia: Bappenas.

Rainwater-Bryant, B. J. (1985) Comparisons of parent obtained and teacher obtained adaptive behavior scores for handicapped children. Unpublished doctoral dissertation, Memphis State University, Memphis.

Raven, J. L. (1962). Coloured Progressive Matrices: Sets A, AB, B. London, Great Britain: H. K. Levis & Co. Ltd. H. K.

Raynes, N. V. (1987). Adaptive behavior scales. In J. Hogg & N. V. Raynes. (Eds.). Assessment in mental handicap: A guide to assessment practices, tests, and checklists. (pp. 81-1065), Kent, Great Britain: Mackays of Chatham Ltd.

Reschly, D. J. (1982). Assessing the mildly mental retardation: The influence of adaptive behavior in socioeconomic status and prospect for nonbiased assessment. In C. R. Reynold & T. B. Gutkin (Eds.). The handbook of school psychology. (pp. 2009-242). New York: John Wiley & Sons.

Reschly, D. J. (1985). Best practices: Adaptive behavior. In A. Thomas & J. Grimes (Eds.). Best practices in school psychology. Kent, OH: National Association of School Psychologists.

Sattler, J. M. (1988). Assessment of children (3rd ed.). San Diego: Jerome M. Sattler, Publisher.

Slate, N. M. (1983). Nonbiased assessment of adaptive behavior: Comparison of three instruments. Exceptional Children, 50, 67-70.

Smith, J. D., & Polloway, E. A. (1979). The dimension of adaptive behavior in mental retardation research: An analysis of recent practice. American Journal of Mental Deficiency, 84, 203-206.

Sparrow, S. S., Balla, D., & Chicchetti, D. C. (1984). Vineland adaptive behavior scales survey form. Circle Pines, MN: American Guidance Service, Inc.

Sparrow, S. S., Rescola, L. A., Provence, S., Condon, S. D., Goudreau, D., & Cicchetti, D. V. (1985). A follow-up of "Atypical" children. Journal of the American Academy of Child Psychiatry, 25, 181-185.

Tittle, C. K. (1982). Use of judgmental methods in item bias studies. In R. A. Berk. (Ed.). Handbook of methods for detecting test bias (pp. 31-63). Baltimore: The Johns Hopkins University Press.

Tombokan-Runtukahu, J. R. (1989). Translation and cultural adjustment of the Vineland Adaptive Behavior Scales for Indonesian children. Unpublished doctoral dissertation. Pittsburgh, PA: University of Pittsburgh.

Zigler, E. A., Balla, D., & Hodapp, R. M. (1984). On the definition and classification of mental retardation. American Journal of Mental Deficiency, 89(3), 251-130.

Numerical values to be plotted for Figure 1

A. Panel A Pairs to Plot

American	Indonesian
(6.5, 1.44)	(6.5, 1.32)
(7.5, 1.58)	(7.5, 1.58)
(8.5, 1.71)	(8.5, 1.58)
(9.5, 1.78)	(9.5, 1.71)
(10.5, 1.83)	(10.5, 1.63)
(11.5, 1.85)	(11.5, 1.76)
(13.0, 1.88)	(13.0, 1.78)
(15.0, 1.93)	(15.0, 1.79)
(17.0, 1.94)	(17.0, 1.83)

B. Panel B Pairs to Plot

American	Indonesian
(6.5, 1.23)	(6.5, 1.23)
(7.5, 1.33)	(7.5, 1.35)
(8.5, 1.46)	(8.5, 1.36)
(9.5, 1.51)	(9.5, 1.49)
(10.5, 1.57)	(10.5, 1.45)
(11.5, 1.60)	(11.5, 1.57)
(13.0, 1.69)	(13.5, 1.54)
(15.0, 1.55)	(15.0, 1.37)
(17.0, 1.82)	(17.0, 1.70)

C. Panel C Pairs to Plot

American	Indonesian
(6.5, 89.6)	(6.5, 73.0)
(7.5, 95.2)	(7.5, 84.7)
(8.5, 96.7)	(8.5, 95.6)
(9.5, 100.2)	(9.5, 92.7)
(10.5, 105.8)	(10.5, 90.5)
(11.5, 108.0)	(11.5, 104.7)
(13.0, 112.2)	(13.0, 109.1)
(15.0, 116.6)	(15.0, 111.2)
(17.0, 123.0)	(17.0, 114.8)

D. Panel D Pairs to Plot

American	Indonesian
(6.5, 7.1)	(6.5, 11.0)
(7.5, 6.8)	(7.5, 9.0)
(8.5, 7.0)	(8.5, 7.5)
(9.5, 7.3)	(9.5, 6.0)
(10.5, 7.4)	(10.5, 6.8)
(11.5, 6.6)	(11.5, 8.3)
(13.0, 6.2)	(13.0, 6.6)
(15.0, 5.0)	(15.0, 5.1)
(17.0, 4.7)	(17.0, 6.2)

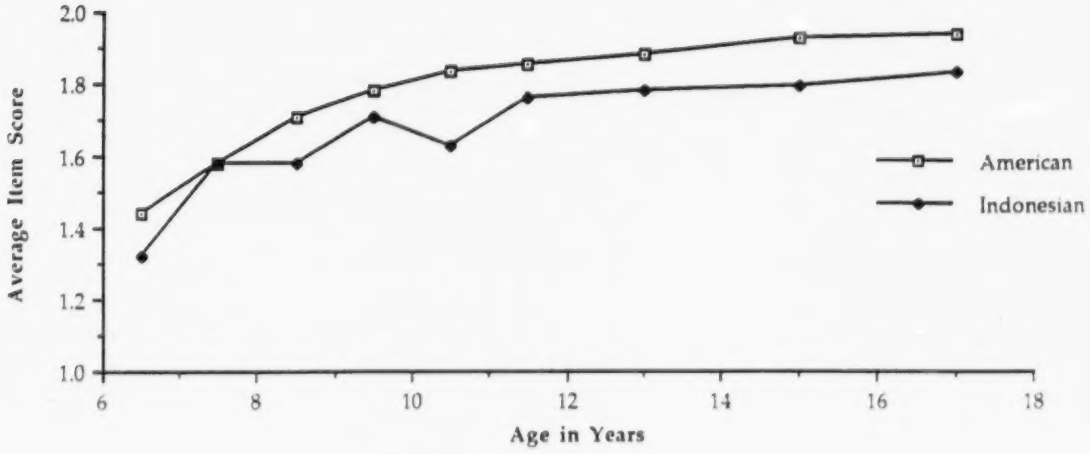
Notes to figure designer:

(1) try to keep all four panels on same page

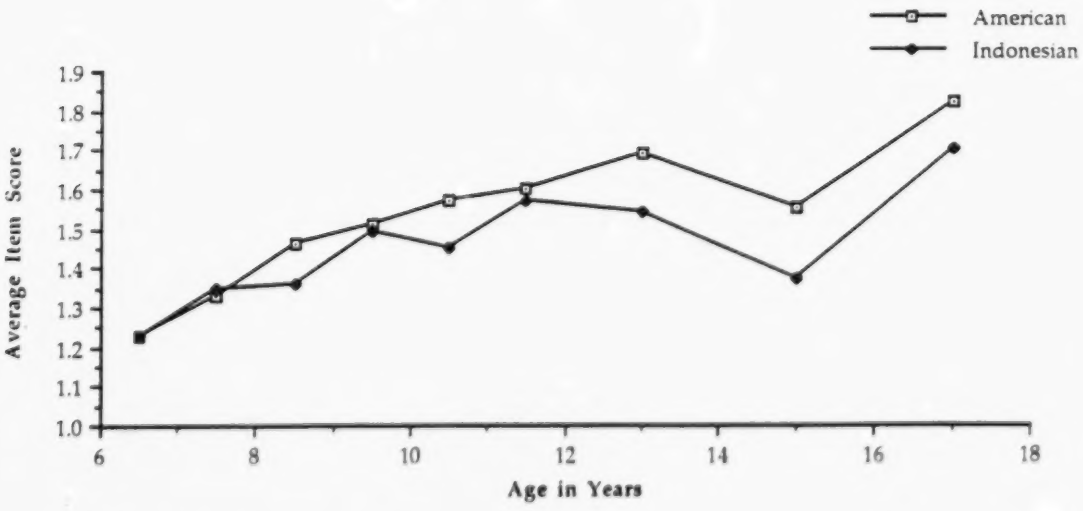
(2) keep lengths of vertical and horizontal axes identical for all panels

(3) use labels (numbers and words) as per penciled graph

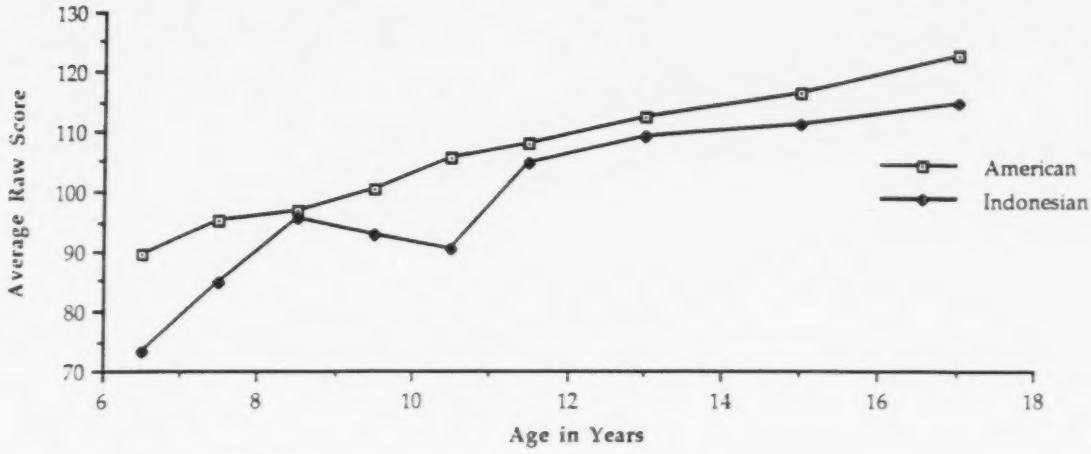
(4) numbers in parentheses on the graph are associated with the Indonesian line (---) and are equal distant from the dots (.) at all points



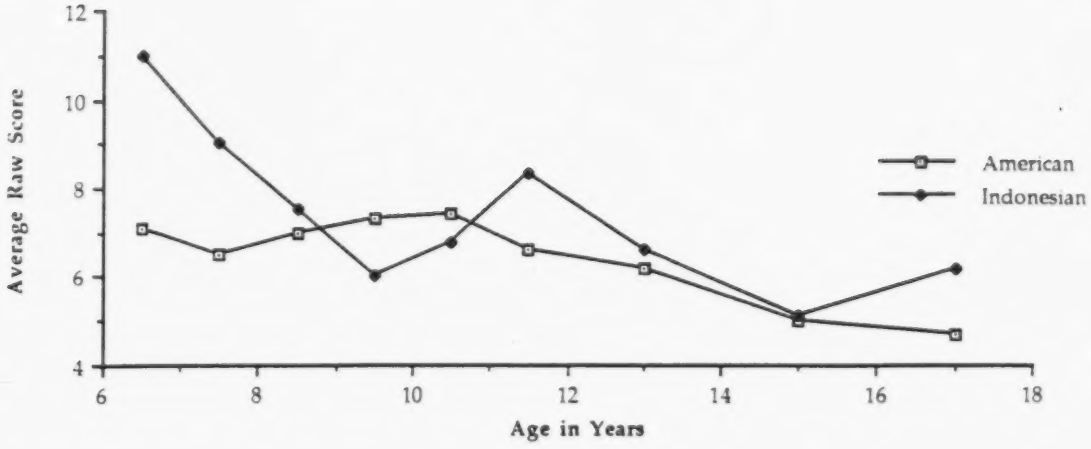
A. Communication Domain



B. Daily Living Skils



C Socialization Domain



D. Maladaptive Behavior Domain

Table 1

Raw Score Means, Standard Deviations, and t-values of Children with Mental Retardation and Children with Normal Intelligence for Each of the IVABS Domains and for the Composite (total). (N=43 matched pairs of children.)

A. Parents

Domain	Mental Retardation Mean	SD	Normal Intelligence Mean	SD	Differences	t-values
Communication	61.58	22.88	110.95	8.97	-49.37	-14.36*
Daily Living Skills	89.70	29.71	131.88	12.64	-42.18	-9.11*
Socialization	67.98	14.34	100.14	12.04	-32.16	-12.16*
Composite	219.56	63.46	342.98	30.85	-123.42	-12.82*
Maladaptive Behavior	118.86	6.04	6.79	2.48	12.07	12.44*

B. Teachers

Domain	Mental Retardation Mean	SD	Normal Intelligence Mean	SD	Differences	t-values
Communication	59.84	23.53	111.65	9.12	-51.81	-14.87*
Daily Living Skills	87.60	28.50	132.28	10.60	-44.91	-10.07*
Socialization	64.84	15.53	100.00	11.72	-35.16	-12.93*
Composite	212.28	63.63	344.16	29.70	-131.88	-13.53*
Maladaptive Behavior	18.98	6.73	5.93	2.78	13.05	11.89*

*p< .001

Table 2

Correlations Between IVABS Scores Assigned by Parents and by Teachers of Indonesian Children With Retardation and with Normal Intelligence

	Domain									
	Communication		Daily Living Skills		Socialization		Composite		Maladaptive Behavior	
A. Children with Mental Retardation (N=43)										
	T	P	T	P	T	P	T	P	T	P
Mean	59.84	61.58	87.60	89.70	64.84	67.98	212.27	219.36	18.98	18.86
SD	23.53	22.88	28.49	29.71	15.53	14.34	6.73	6.04	63.63	63.46
r	.98		.96		.87		.97		.85	
B. Children with Normal Intelligence (N=43)										
	T	P	T	P	T	P	T	P	T	P
Mean	111.64	110.95	132.51	131.88	100.00	100.14	344.16	342.98	5.93	6.79
SD	9.12	8.97	10.60	12.64	11.72	12.04	29.70	30.85	2.78	2.47
r	.88		.82		.92		.94		.80	

Note: $p<.01$ for all the correlations.

Table 3

Test-retest Reliability Coefficients Over a Two Week Interval for IVABS Parents' Ratings (N=43)

	Domain scores				
	Communication	Daily Living Skills	Socialization	Composite	Maladaptive Behavior
A. Children with Mental Retardation (N=43)					
1st admin.					
Mean	61.58	89.70	67.98	219.26	18.86
SD	22.86776	29.71	14.34	63.46	6.04
2nd admin.					
Mean	63.12	89.91	69.56	222.58	18.42
SD	23.93	29.91	15.06	65.26	6.36
Correlation	.97	.99	.96	.99	.97
B. Children with Normal Intelligence (N=43)					
1st admin.					
Mean	110.95	131.88	100.14	342.98	6.79
SD	8.97	12.64	12.04	30.85	2.47
2nd admin.					
Mean	111.35	133.35	100.58	345.28	6.40
SD	8.95	10.63	12.43	29.93	2.52
Correlation	.86	.87	.95	.95	.91

Note: $p<.01$ for all correlations

Table 4

Correlation of the IVABS with Cognitive Variables

IVAB	Language grades vs: Teachers'	Parents'		Mathematics grades vs: Teachers	Parents'	
Variable	Ratings	Ratings	CPM	Ratings	Ratings	CPM
A. Children with Mental Retardation (N=43)						
Communication	.88 (3.46*)	.87 (3.06*)	.68	.78 (3.24*)	.77 (2.89*)	.54
Daily Living Skills	.87 (2.96*)	.87 (2.86*)	.68	.73 (2.24*)	.66 (1.16)	.54
Socialization	.72 (0.43)	.77 (1.10)	.68	.78 (3.00*)	.69 (1.58)	.54
Composite	.89 (3.86*)	.89 (3.74*)	.68	.81 (3.94*)	.74 (2.36*)	.54
Maladaptive Behavior	-.61 (0.73)	-.55 (1.14)	.68	-.52 (0.09)	-.43 (0.74)	.54
B. Children with Normal Intelligence (N=43)						
Communication	.26 (1.36)	.44 (0.02)	.44	.24 (0.75)	.31 (1.15)	.46
Daily Living Skills	.32 (0.88)	.31 (0.85)	.44	.19 (2.01)	.17 (1.95)	.46
Socialization	.39 (0.42)	.28 (1.23)	.44	.29 (1.35)	.19 (2.20*)	.46
Composite	.35 (0.73)	.37 (0.56)	.44	.26 (1.65)	.23 (1.76)	.46
Maladaptive Behavior	-.31 (0.77)	-.40 (0.25)	.44	-.21 (1.46)	-.31 (0.92)	.46

*Significant at the .05 level.

Note: Numbers in parentheses are the Hotelling t-values for the appropriate IVABS-CPM comparison (see text).

Table 5

Correlations of IVABS Variables with SES

IVABS Variable	SES vs ratings from: Teachers	Parents	Hotelling's t-value	Significance
A. Children with Mental Retardation (N=41)*				
Communication	.12	.12	0.09	NS
Daily Living Skills	-.03	-.07	-0.83	NS
Socialization	.12	.03	1.09	NS
Composite	.07	.02	1.07	NS
Maladaptive Behavior	.07	.19	1.37	NS
B. Children with Normal Intelligence (N=41)*				
Communication	.23	.35	1.64	NS
Daily Living Skills	-.04	-.05	-0.04	NS
Socialization	.10	.06	0.57	NS
Composite	.09	.10	0.22	NS
Maladaptive Behavior	-.15	-.05	0.65	NS

*Two matched pairs of orphans were eliminated because they had no SES scores.

Table 6

Average Item - Domain Score and Item-Composite Score Correlations for the IVABS (N=86 Children)[a]

IVABS domain	Domain score with which items were correlated: Communication	Daily Living Skills	Socialization	Correlation with Composite
Communication				
Mean r	.71	.64	.64	.68
SD of r	.04	.03	.03	.04
n[b]	54	66	47	167
Daily Living Skills				
Mean r	.53	.59	.52	.57
SD of r	.05	.04	.04	.04
n	54	66	47	167
Socialization				
Mean r	.54	.53	.60	.57
SD of r	.04	.03	.03	.04
n	54	66	47	167

[a]Items with zero-valued correlations are not included (see text).
[b]n = number of item correlations averaged.

Table 7

Average Within and Between Domain Interitem Correlations[a]

Domain		Domain		
		Communication	Daily Living Skills	Socialization
Communication				
	Mean r	.47	.37	.38
	n[b]	1,431	4,104	2,592
Daily Living Skills				
	Mean r	.37	.34	.30
	n	4,104	2,849	3,647
Socialization				
	Mean r	.38	.30	.34
	n	2,592	3,647	1,128

[a]Zero-valued correlations were eliminated (see text).
[b]n = number of correlations that were averaged.